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ABSTRACT

Lesson plans, developed by teachers in an environmental education workshop, are compiled in this booklet. Curriculum areas covered by the plans include science, language arts, mathematics, social studies, art, recreation, and health. In general they specify: subject category, contributor's name, title of activity, grade level, major concept, purpose and objectives, materials required, procedures to follow, vocabulary words, related activities, resources, and evaluation. Lists of resource personnel and participants, the workshop schedule, and a reference list of books, pamphlets, and films supplement the lesson plans. (EI)

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MURRAY STATE UNIVERSITY -- TEACHERS' WORKSHOP

IN

ENVIRONMENTAL EDUCATION

Youth Station, LBL  
August 8-14, 1971

SE 016 141

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August 8-14, 1971

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## LESSON PLANS

Basic Lesson Plan Form (Not all parts will be used in every lesson plan.)

Category. (example - Language Arts)

Contributor:

Title of Project

Grade Level:

Concept:

Purpose:

Behavioral Objectives - 1.  
2.  
3.

Materials:

Procedure:

Introducing the concept -

Developing the concept -

Ending the concept -

Related Activities:

Resources:

Evaluation:

Category: Science

Contributor: Barbara Peck

When It Rains - It Spores

Grade Level: Sixth Grade

Purpose: To investigate abundance of mushroom varieties in an area.  
To recognize the role of the fungi.  
To become familiar with mushroom structures, variety, and function.

Behavioral Objectives:

1. Student will be able to draw and explain functional parts of mushroom structure.
2. Student will be able to identify two varieties of mushrooms.
3. Student will be able to show optimum areas in forest for mushroom growth.

Materials: Hand mirror, pocket identification book, and magnifying glass.

- Procedure:
- I. Introduction
    - A. Role of Fungi
      1. Decomposer
      2. Stabilizer
      3. Food Source
      4. Aesthetic value
    - B. Mushroom Structure
      1. Similarities
      2. Differences
      3. Reproduction
    - C. Growing Conditions
    - D. Edibility (caution students)

Assign each team a pre-selected area and answer the following questions:

1. How many examples of your selected mushroom can you find?
2. Where do most of them grow?
3. Has it been used as a food source?
4. Any variety in shape? In color?
5. What grows around it?
6. Can you find any mycellium?
7. How are the gills attached?
8. What other fungi do you find?

After returning, discuss results of their investigation.  
Students could classify the mushrooms collected according to color, shape, gills, spore color, etc.

Let students make spore prints with the mushrooms collected, or dry them for permanent collections by placing in silicage for several days.

Category: Science

Contributor: Frances Pittman

Insects Are Different Because Of Their Habitat

Grade Level: Grade 3

Purpose: 1. To establish the relationship of insects to their habitats.  
2. To develop skill in making accurate and thorough observations.  
3. To review the parts of an insect.

Materials: An insect lense and work sheet

Procedure: Some basic concepts have already been covered. We have learned that the body itself is composed of three divisions:

- a. Head
- b. Thorax - the thorax has three segments, each with a pair of jointed legs; so an insect normally has six legs. Most insects also have two pair of wings attached to the thorax, but some have only one pair, and a few have none at all.
- c. Abdomen

Insects usually have two sets of jaws, two kinds of eyes, simple and compound, and one pair of antennae.

Habitats for collection of insects:

1. Logs
2. Rocks
3. Grass

General characteristics to look for:

1. Shape
2. Body covering
3. Legs
4. Color
5. Feet
6. Antennae
7. Wings
8. Possible food

An area will be designated and boundaries established. Rules will be set up; (example - when looking under a log turn the log over away from you.)

After a designated time, the children will return and a discussion period will be conducted on what makes a certain habitat suitable for a particular kind of insect.

In some instances, further research in the classroom may be necessary.

Category: Science

Contributor: Frances Pittman

Insects Are Different Because of Their Habitat

Continued

Related Activities:

This outdoor activity could be correlated with  
Language Arts - poems, stories, etc.

Math - measure grasshoppers jump and compare with  
the height of a child. Child could jump extremely  
high if he could jump as high as a grasshopper.

Social Studies - social insects compare with man.

Art - draw insects, mosaics from pebbles, sand,  
leaves, etc.

Category: Science

Contributor: Nell Prior

Wildlife - Its Value and Its Environment

Concept: 1. Wildlife is valuable and important to man.

Procedure: Ask for reasons why wildlife is valuable to students:

- a. Food value
- b. Clothing
- c. Recreation - Sport and Non-Consumptive
- d. Economics - Food, Clothing (direct)  
Recreation (indirect)
- e. Ethics
- f. Balance of nature
- g. Knowledge - Source of knowledge (research, etc.)  
Environmental monitor

Concept: 2. Many species of wildlife are presently endangered due to pollution, pesticides, destruction of habitat, and encroachment by man. In addition to trying to clean up our polluted environment.

3. In order to protect wild creatures and provide for their future existence and the existence of man with whom they share the environment. It is necessary to know something about them - where they live, their requirements of life, and how they get along in their environment.

Procedure: a. Introduce the following terms:

| <u>Term</u> | <u>Key Word of Definition</u> |
|-------------|-------------------------------|
| Ecology     | Interrelationship             |
| Habitat     | Address                       |
| Niche       | Job                           |
| Adaptation  | Specialization                |

- b. Question students as to their own habitats, niches, adaptations, etc.
- c. Explore several habitats:
  - (1) List a couple of animals which live in each habitat;
  - (2) Decide what their specific niches are;
  - (3) Discuss how they are adapted to their niches;
  - (4) Discuss their values or what would happen if each animal became extinct.
- d. Just for fun: One wildlife requirement is food; have students collect at least ten things which animals use for food and tell what animal uses them and what habitat they came from.

Category: Science

Contributor: Nell Prior

Title: Wildlife - Its Value and Its Environment

Continued

| Habitat                                                                                                    | Species    | Niche                                                                   | Adaptations                                                    | Values                                                                   |
|------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------|
| Woods                                                                                                      | Woodpecker | Insect eater especially in wood. Nests in trees.                        | Chisel beak, spear tongue, grasping feet, Prop tail            | Control insect population, helps break down dead trees.                  |
| Woods                                                                                                      | Squirrel   | Eats nuts and berries. Food for fox, hawk, etc.                         | Grasping feet, tail for balance, good eyesight and hearing.    | Plants and transports nuts of trees. Food and sport for man.             |
| Field                                                                                                      | Insects    | Eat plants. Food for animal, birds, etc. Some burrow in soil.           | Wings, reproduction. Communication (bees)                      | Pollinate flowers, produce honey, silk, etc. Feed birds. Some help soil. |
| Field                                                                                                      | Moles      | Eat plants and insects. Food for hawks and skunk. Tunnel in soil.       | Spade-like digging feet. Good nostrils. Sleek fur. Small eyes. | Aerate and improve soil. Control insects.                                |
| Edge<br>(Woods-Field)<br>(Diversity is the spice of life)<br>(Like having a supermarket next to your home) | Deer       | Herbivore, browse & graze                                               | Good hearing & smelling. Swift running.                        | Food and sport for man, also income.                                     |
| Thicket<br>(Edge-Field)                                                                                    | Rabbit     | Herbivore, Food for fox, hawk, etc.                                     | Good hearing, eyes side of head to see behind when feeding.    | Sport & food for man. Domestic & wild. Food for many wild species.       |
| Lake                                                                                                       | Fish       | Herbivore and/or carnivore. Food for many carnivore (bear, man, & hawk) | Streamlined body gills, fins.                                  | Control insects (mosquito, etc.) Food & income for man.                  |
| Edge<br>(Lake-Wood Shore)                                                                                  | Coon       | Omnivore, nocturnal, den in trees                                       | Grasping paws, Good night vision                               | Scavenger-depose dead matter. Food, sport, clothing. Transports seeds.   |

Conclusion: Diverse habitats are needed for healthy wildlife populations. Destruction of habitat or of any one species of wildlife upsets the whole balance. Wildlife management practices are based on the knowledge of the requirements of certain species and management of land that need these needs.

Category: Science

Contributor: Dorothy Booker

### Identifying Trees

Grade Level: Grades 4-8

Concept: Students learn by observation and resources

Objectives:

1. To learn how to identify trees.
2. Give the child a feeling of adventure in the woods.
3. To allow the child to make his own discoveries

Procedure:

1. Take a field trip and gather sample of leaves, bark, fruit or seed. Learn to identify them according to special characteristics. Example - color vein pattern simple or compound - label with teeth.
2. Go on a tree sketching trip. Go back to the same familiar location.
3. In the fall observe the leaves as they fall, noticing the change.
4. In the spring study the leaves again. Relate your study to insect homes and eating habits found on special leaves.

Category: Science  
Contributor : Dorothy Booker  
Title: Identifying Trees

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Continued

 Toothed



Alternate  
Compound



Lobed



Squarish



Glove Shape



Star Shape



Toothed and Lobed



Category: Science

Contributor: Judy Baucum

Plant Succession and Ecology

Grade Level: Sixth Grade

- Objectives:
1. To examine the competitive and cooperative relationships that exists among the living things in a small area.
  2. To develop skill in making accurate and thorough observations.
  3. To recognize stages of plant succession.

- Vocabulary:
1. Ecology - study of the interrelationships of plants and animals with themselves and with each other.
  2. Plant succession - natural changes in plant population that occurs over time.
  3. Lichen - looks somewhat like moss, consists of a fungus and an alga growing together.
  4. Fungus - plant without flowers, leaves or green coloring matter.
  5. Spores - a single cell capable of growing into a new plant or animal.
  6. Community - organisms occupying the same basic area.
  7. Deciduous - shedding leaves annually.

Procedure: Before going outside, I will introduce various terms as listed above. We will discuss each term so each student will know what to look for.

Then we will proceed outside and down the trail. At a suitable point the group will be stopped and told to form two circles. Each group of five will be told to examine the area inside their circles. At this time I will give them the worksheet.

This exercise could also be done by individuals on staked off plots.

After about 20 minutes we will stop the observation and discuss the questions asked on the worksheet.

Conclusion: From this activity, the students will find many areas of study they may want to pursue.

Category: Science  
 Contributor: Judy Baucum  
 Title: Plant Succession and Ecology

Continued

Vocabulary:

|           |            |
|-----------|------------|
| Lichen    | Succession |
| Fungus    | Deciduous  |
| Spores    | Adapt      |
| Community |            |

What is plant succession?

What is ecology?

Get into small groups -- Each person stake off a plot 3 feet square using stakes.

1. List all plants in your plot.
2. List all animals in your plot.
3. How do these animals and plants seem to relate to each other?
4. What could be removed from your plot without upsetting the balance of nature?
5. Are there any signs in your area of how animals have adapted to this environment?
6. Are there any signs of man-made changes?

7. Are man-made changes always good?

Ever good? \_\_\_\_\_

Never good? \_\_\_\_\_

8. Can anything in this plot have any relation to your life?

9. Do you see any signs of plants adapting themselves to their environment?

Describe this.

10. Do you see signs of the 1st stage of plant succession?

(Bare rock and lichens) \_\_\_\_\_

Second stage? \_\_\_\_\_  
 (Mosses)

Third stage? \_\_\_\_\_  
 (Ferns--any signs of flowers and seeds on these?)

Fourth stage? \_\_\_\_\_  
 (Grasses)

Fifth stage? \_\_\_\_\_  
 (Shrubs and small plants)

Sixth stage? \_\_\_\_\_  
 (Trees--what types? What is under them?)

Category : Science

Contributor: Maritom Sinquefield

Erosion - "Physical"

Grade Level: Fifth Grade

Concept: 1. To introduce stone sizes  
2. To develop an understanding of rock abrasion.  
3. To show the process of physically weathered materials.

Purpose: To develop an awareness of the various processes of physical erosion.

Objectives: 1. To see if water changes the size of the pebbles.  
2. To see if all pebbles look alike.  
3. To see if the students can see similar shapes and smoothnesses in the surfaces of stones or pebbles.  
4. To see how many colors the students can find in the pebbles they have collected.  
5. To find how many pebbles shine or sparkle.  
6. To see how many pebbles you can shine a light through.

Materials: Available by teacher:

|                      |                                 |
|----------------------|---------------------------------|
| Tall, plain jars (4) | Plastic Bags (4)                |
| Magnifiers (4)       | Measuring Tool - In. and MM (4) |
| Hammers (4)          |                                 |

Procedure: Collected by the students:

|          |                                    |
|----------|------------------------------------|
| Pebbles  |                                    |
| Water    | Scale Given                        |
| Clay     | (1 in. = 2.54 cm.)                 |
| Silt     | (1 in. = 25.4 mm.)                 |
| Sand     | (1/16 - 2 millimeters)             |
| Granules | (2-4 millimeters across)           |
| Pebbles  | (4-64 millimeters across)          |
| Cobbles  | (64-256 millimeters across)        |
| Boulders | (more than 256 millimeters across) |

1. Observe the pebbles as they appear in the glass jar.
2. Observe the pebbles when water is added.
3. Empty glass jar of contents - use magnifying glass to observe pebbles and for classifying.
4. Put pebbles in plastic bag. With hammer break pebbles apart until everyone of them tend to have been disintegrated.

Category: Science  
Contributor: Maritom Sinuefield  
Title: Erosion - "Physical"

Continued

- Conclusion:
1. Go back over methods with class having them to answer the six problems.
  2. To classify stone sizes
  3. To understand the disintegration of stones.

Resources: Dasmann, Raymond F., Environmental Conservation (New York: John Wiley and Sons, Inc., 1965)

Rockcastle, Verne N. and Schmidt, Victor E., Teaching Science With Everyday Things (St. Louis: McGraw-Hill Book Company, 1968)

Category: Science

Contributor: Mary Hook

### Aging Trees By Annual Ring Method

Concept: Aging trees by use of annual rings is an approximate way to get the age of a tree. This method is particularly well illustrated in northern regions where there is an extreme variation in temperature.

Purpose: To let students count annual rings on a stump in order to illustrate the principle of aging trees by use of annual rings.

Procedure: I. Introduction

- A. Two types of growth in woody plants
  1. Primary growth which increases or lengthens the height of a stem.
  2. Secondary follows primary growth and increases the diameter of the tree.
- B. Two types of tissues in woody stems
  1. Phloem - hollow stems which conducts food through plant.
  2. Xylem - woody part of tissue and conducts water and minerals upward, found inside phloem.
- C. Annual rings
  1. Definition - concentric circles that can be seen on cross-section of a stem.
  2. Cause - caused by an actively growing layer of tissue near the outer edge of the tree called the cambium
    - a. Cambium produces secondary xylem which constitutes the greater part of a woody plant
    - b. Xylem is laid down during spring and summer months.
      - (1) Spring wood-inner layer which has cells which are large and thin-walled
      - (2) Summer wood-outer layer composed of small cells and thick walls
  3. Results - Because of the difference in the types of cells the concentric rings are formed.

II. Outdoor Activities

- A. Count the number of growth rings as close to the ground as possible.
  1. With a pencil draw a line from the center of the cross-section to the bark.
  2. Mark each 10 year interval with one dot; each 20 year interval with two dots.
  3. Determine the approximate age of the tree.

Category: Science

Contributor: Mary Hook

Title: Aging Trees By Annual Ring Method

Continued

Procedure:

- B. Correlate width of growth rings with environment
  - 1. Light
  - 2. Temperature
  - 3. Rainfall
  - 4. Length of growing season
  - 5. Thinning of forest
- C. Make pattern plots of the annual rings
  - 1. Cut graph paper with 2 mm. divisions into strips about 3 inches wide and 10 inches long.
  - 2. Each of the vertical lines represents one ring or one year.
  - 3. Narrow growth lines are marked by heavy lines.
  - 4. Distinctively broad rings are represented by the letter "B".
  - 5. The in-between size need not be marked.
  - 6. Correlate graphs from several different trees.
- D. Annual ring impressions
  - 1. Can be made in field and saved for later counting.
  - 2. Pin or tack paper to cross section of tree.
  - 3. Rub over paper with crayon or pencil.

Category: Science

Contributor: Wynne J. Wiegner

Distance Traveled By An Object Freely  
Falling Through The Atmosphere

Grade Level: Grade Nine

- Concepts:
1. Speed - Distance traveled per unit of time.
  2. Velocity - Speed in a definite direction.
  3. Initial Velocity - ( $V_i$ ) Velocity of an object at the start of the experiment.
  4. Final Velocity - ( $V_f$ ) Velocity of an object at the end of the experiment.
  5. Average Velocity - ( $V_{ave}$ ) The difference between final velocity and initial velocity divided by two (with constant acceleration) such as,  $V_{ave} = \frac{V_f - V_i}{2}$
  6. Acceleration - Rate of change of velocity (per unit of time).
  7. Acceleration due to gravity - Acceleration of an object caused by the gravitational attraction of the earth on any mass.
- Purpose:
1. To review concepts of: speed, velocity, acceleration, acceleration due to gravity.
  2. To introduce the concept of calculation of the distance traveled by a freely falling object through earth's atmosphere.
  3. To examine the time of fall of objects of different shapes, densities, and masses from the same height.
  4. To introduce (by later discussion) the concepts of buoyancy and air resistance and terminal velocity.
- Objectives:
1. Student will be able to calculate the distance fallen by freely falling object in earth's atmosphere.
  2. Student will be able to choose formulas related to freely falling bodies from a list of formulas provided them.
  3. Student will be able to calculate the height of a tall object within two minutes of performing a simple experiment.
  4. Student will be able to correctly follow experimental procedure.
  5. Student will be able to correctly identify experimental materials which will yield minimum experimental error.
- Problem:
1. To determine if the acceleration due to gravity is constant.
  2. To determine factors affecting acceleration due to gravity.

Category: Science

Continued

Contributor: Wynne J. Wiegner

Title: Distance Traveled By An Object Freely Falling Through The Atmosphere

Procedure:

A. Introduction

1. Basic working knowledge of elementary algebra including cross multiplication and substitution.
2. Basic knowledge of the concepts of speed, velocity, and acceleration (first unit of second semester).
3. Basic knowledge of physical units (second week of first semester).
4. Basic knowledge of experimental procedure.

B. Development

1. Derivation of formulas by teacher (see handout).
2. Explanation of experimental procedure with cautions
  - a. Drop various objects from the top of silo overlook.
  - b. Determine interval of fall (see C).
  - c. One student with a stopwatch is designated as the time keeper and starter. He will signal the student who is to release the test object as to when to let it go by the count "Ready, Set, Go!"
  - d. The timer will stop the watch upon hearing the impact of the object at the bottom of the silo.
  - e. Students will calculate the height of the silo by using the formula--  $d = 16 + 2$ .

Conclusion:

1. The acceleration due to gravity is a constant.
2. The acceleration due to gravity is independent of the mass of the object.
3. The acceleration due to gravity through the atmosphere depends on the surface area of the object and buoyancy.
4. The height of a tall object can be determined by a simple experiment.

Follow-Up:

Discussion and/or experimentation of:

1. Buoyancy
2. Friction
3. Guinea and feather tube
4. Streamlining
5. Eastward drift of an object falling from a great height (Due to earth's rotation)
6. Weight lessness
7. Terminal velocity
8. Sources of experimental error and their correction

Related

Activities: Mathematics - Calculation of silo's height by ratio with shadows of silo and man. Calculation of silo's height by trigonometric angle.

Language Arts - Haiku construction concerning gravity, acceleration, speed, velocity, vacuum, friction, buoyancy, surface area, etc.

Social Studies - Study of building structure of school, silo, surrounding houses, campsites, etc.

Art - Study and drawing of architecture of silo (school bldg.) making of streamlined objects for use of the experiment.

Category : Science

Continued

Contributor : Wynne J. Wiegner

Title: Distance Traveled By An Object Freely Falling Through The Atmosphere

Distance Fallen By An Object In A Given Time

$$V_{ave} = \frac{d}{t}$$

$$V_{ave} = \frac{V_f - V_i}{2}$$

$$i \text{ } F \text{ } v_i = 0$$

Equate  
These

$$V_{ave} = \frac{V_f}{2}$$

$$\frac{d}{t} = \frac{V_f}{2}$$

Cross Multiply

$$2d = V_f \cdot t$$

Divide both sides by 2

$$d = \frac{V_f \cdot t}{2}$$

Multiply by  $\frac{t}{t} = 1$ 

$$d = \frac{V_f \cdot t^2}{2t}$$

Move 2 out front of fraction

$$d = \frac{1}{2} V_f \cdot t^2$$

Substitute:  $a = \frac{V_f}{t}$ 

$$d = \frac{1}{2} a t^2$$

Substitute:  $a = g = 32 \text{ ft/sec}^2 \text{ (Eng)}$ 

$$d = \frac{1}{2} g t^2$$

 $g = 9.8 \text{ mn/sec}^2 \text{ (Metric)}$ 

$$* \quad d = \frac{1}{2} 32 t^2$$

Cancel after multiplying

$$d = \frac{32}{2} t^2$$

$$d = 16 t^2$$

← Answer is in Feet if English System is used

$$* \quad d = \frac{1}{2} 9.8 t^2$$

$$d = \frac{9.8}{2} t^2$$

$$d = 4.9 t^2$$

← Answer is in Meters if Metric System is used

Category: Science

Contributor: Virginia Dubose

Nature Hunt

Grade Level: Grade 2-12

Objective: To awaken curiosity in preparation for a new area.

Materials: Copies of Nature Hunt, glue, pencils and board.

Procedure:

1. Teacher will do a "dry-run" to determine best part of campus or field for location of treasures.
2. Brief explanation to children as to behavior and rules.
3. Announce time - distribute paper - blow whistle and proceed with hunt.
4. Call time - let children add total scores.

Related Activities:

Use materials gathered and make a collage.

Category: Science  
 Contributor: Virginia Dubose  
 Title: Nature Hunt  
 Sample Worksheet

Continued

Nature Hunt

1. Everything is out of doors.
2. Except for lichen, moss and fungus, no living things are to be picked.
3. When the whistle blows, the Hunt is over.

BE SURE TO TAKE CARE OF OUR AREA.....USE GOOD SMOKEY BEAR SENSE

| <u>ITEM</u>                                                   | <u>POINTS</u> | <u>YOUR POINTS</u> |
|---------------------------------------------------------------|---------------|--------------------|
| One small acorn                                               | 1             |                    |
| Three different colored stones                                | 3             |                    |
| Feather                                                       | 2             |                    |
| Three different shaped leaves<br>from off the ground          | 3             |                    |
| Lichen: Gray plant growth on<br>many of the trees and rocks   | 2             |                    |
| Stick shaped like your teacher                                | 2             |                    |
| An insect (insects have 3 body<br>parts, three pairs of legs) | 3             |                    |
| Place where you saw a wildflower                              | 2             |                    |
| A dead stick with opposite<br>branching                       | 2             |                    |
| Sample of air                                                 | 1             |                    |

Category: Science

Contributor: Carl Wayne Darnall

### Water Pollution

Purpose: Need for awakening to seriousness of problem.

Objectives:

1. To present facts about pollution which will illustrate the seriousness of the problem
2. To point out ways in which water pollution occurs
3. To present knowledge which will help the student to see his responsibility in the war on pollution
4. To help students to realize the urgent need for positive steps to be taken in cleaning up our waterways.

Procedure:

- I. Introduction
  - A. Increasing population
  - B. Increasing pollution
  - C. Factors contributing to water pollution
    1. Sewer overflow
    2. Refuse storage
    3. Collection, transportation and disposal
    4. Littering
    5. Air pollution deposition
    6. Pesticide spraying
    7. Effectiveness of cleaning equipment
  - D. Industry's role in pollution
    1. Food processing plants
    2. Pulp and paper companies
    3. Mercury pollution
  - E. "Theory" -- some pollutants may cause cancer
  - F. Detergents as pollutants
    1. Few known to be cancer producing
    2. May indirectly promote cancer
      - a. Act on lining of digestive tract
      - b. Change tissues so chemicals more easily absorb
  - G. Contribution of municipalities to pollution
    1. Overflow from combined sewers
    2. Solid wastes from cities
  - H. Great Lakes as example
    1. Lake Erie
      - a. Lake Erie is "dying"
        - (1) Man-made pollutants build up
        - (2) Pollutants use all oxygen
      - b. Erie called huge sewage reservoir
        - (1) 1.5 million pounds pollution each day from Detroit River
        - (2) 89% of waste at west end gets no secondary treatment
      - c. 3.2 million people served by Erie in 1965

Category: Science

Contributor: Carl Wayne Darnall

Title: Water Pollution

Procedure:

- d. More than 1/4 of Lake Erie useful water life smothered
- e. 1966 report--secondary treatment given to 53% from population of 10 million
  - (1) Secondary treatment removes up to 65% phosphates
  - (2) Primary treatment given to about 41% municipal wastes
  - (3) 6% receives no treatment
- f. Steps to prevent death of Lake Erie
  - (1) Cleveland plant
  - (2) Dow Chemical
  - (3) U.S. Steel Corporation
- 2. Lake Michigan
  - a. Geologically young lake
  - b. World's sixth largest lake
  - c. 1967 - five mile oil slick from East Chicago, Ind.
  - d. DDT and dieldrin sprayed in watershed area
    - (1) Pesticides washed into lake
    - (2) Consumed by rainbow trout---possible extinction
  - e. Storm-sewer overflow
- I. Remedies for pollution
  - 1. Better planning of pollution control methods
  - 2. More advanced water treatment facilities
  - 3. Greater public awareness and cooperation
  - 4. Big business against pollution
  - 5. Industrial waste run through municipal treatment plants
    - a. Kalamazoo, Michigan
    - b. Water Quality Act - 1965
      - (1) Water resources are national, state, and local responsibility
      - (2) Provision requiring establishment of water quality standards by all states
- II. Development
 

After the lecture and class discussion of the lesson the class will be taken outside for a game. There will be two teams to play this game called "ABC". Each team member tries to find articles which pollute and the team with the most items wins.
- III. Ending:
 

Discuss with the class the views on pollution causes and results, remedies and latest proceedings in war against water pollution.

Category: Science

Contributor: Carrie B. Gore

### Algae

Grade Level: Grade Four

Purpose: Teacher's: To determine if children can perform pre-stated general objectives or aims.

Pupil's: To collect samples of algae and to examine algae under the microscope.

- Objectives:
1. To recognize what algae are.
  2. To teach children the structure of algae.
  3. To recognize algae are the simplest green plants, and have no roots, stems, and leaves.
  4. To recognize that the cells of all algae contain chlorophyll, so the algae are able to make their own food by photosynthesis, just as seed plants do.
  5. To recognize that the cells of all algae contain green-colored chlorophyll, many algae also have other pigments that hide the green chlorophyll color.
  6. To list the five common groups of algae on the basis of color classification:
    - a. Blue-green
    - b. Green
    - c. Golden brown
    - d. Brown
    - e. Red algae

- Materials:
1. A lake or stagnant pool
  2. 1 large mouth jar for each group of four
  3. 1 microscope for each group of four
  4. Slides for microscope
  5. Cover slips for slides
  6. Tap water (that has been allowed to stand for 24 hours in a large wide-mouth jar to allow chlorine in the water to escape)

Procedure: Have a discussion of water and some of the small living things in the water.

Take a field trip to a nearby pond, lake, stream, or stagnant pool and collect algae.

The pupils should be able to recognize algae under the microscope and be able to complete a written examination based on the forementioned specific objectives with a minimum of 75% accuracy.

Category: Science  
Contributor: Carrie E. Gore  
Title: Algae

Continued

Vocabulary: New words were introduced at the beginning of the discussion:

Algae are the simplest green plants, and have no roots, stems, or leaves.

Many algae form colonies which are made up of many one-celled algae.

Many algae look like threads called filaments, which are also attached to each other to form colonies.

Related Activities:

Pretend that you belong to a colony of algae and write a story telling what you think your life would be like.

Category: Science  
Contributor: Carrie B. Gore  
Title: Algae  
Sample Worksheet

### Algae

#### Evaluation Quiz

I. Choose the correct word for each blank:

(1.) algae      (2.) colonies      (3.) filaments

1. \_\_\_\_\_ are the simplest green plants,  
and have no roots, stems, or leaves.

2. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_ are the names of classes of algae  
according to color.

3. Many algae look like threads called \_\_\_\_\_.

II. Write five sentences about algae. (They must be true sentences.)

Category: Language Arts

Contributor: Joan Lake

### Developing the Five Senses

Grade level: Second Grade

**Purpose:** The purpose of the outdoor education program is to develop the use of powers of observation as avenues of learning through the involvement of all senses. To communicate any feeling, mood, or idea about nature, one must use all his senses to observe his environment. If one uses all his senses to learn about the outdoors, he will question, understand, appreciate and enjoy it better. When one sense is impaired, often others may become better developed.

The utilization of the senses for environmental observation will be related to experiences the children already know.

**Behavioral Objectives:** How you recognize the different senses:

1. How do you know your mother is cooking bacon in the morning if you do not see it? Smell
2. How do you know the color of my dress is blue? See
3. How do you know chocolate candy is sweet? Taste
4. How do you know tissue is soft? Feel
5. How do you know a dog is barking? Hear

These five things; smell, sight, taste, feel, and hear make up your five senses.

**Materials:** Eight bags or sacks, a feel chart containing the following words: fuzzy, soft, hard, sticky, rough, smooth, long, and short. Also, an activity sheet which lists the five senses.

**Procedure:** Take the children outside to utilize their senses for environmental observation. Several activities will be done to acquaint children with how they use their senses in the outdoors. Only one activity per day will be used.

Each child will take a bag and feel, not look, into the bag and describe what he feels. If he says the object is round -- round as what? This will help to build vocabulary. The other children try to guess what the object is from the various descriptions.

Each child will observe and select an object that fits the words from the feel chart. They will decide who has the best object and place it on the chart.

With the activity sheet each child will identify six objects and tell what sense he used. For example, bark on a tree. Can we hear the bark? Can we see bark? Can we smell bark? Can we taste bark?

Have the children try to identify an object where all the senses are used.

Using the Senses

**Purpose:** To help students to become aware of the aesthetic value of their environment by being able to hear the sounds of nature and find an example of something they feel has beauty.

To provide students with the tools to develop good listening habits by being able not only to hear the sounds but also to recognize those sounds and describe their feelings about those sounds.

To help students to be able to improve their oral expression by describing the things they see and hear and to improve their written expression by composing sentences expressing their feelings about the sights and sounds they experience.

To help students improve their vocabulary by discussing those new words some students might use in their sentences.

**Behavioral Objective:** To aid individual students to express themselves by using the senses both in the written as well as the spoken word.

**Procedure:**

**I. Hearing and Listening**

- A. List or name the sounds you hear.
- B. Discuss good listening habits.
- C. Discuss the sounds the students listed -
  1. Identify the sound.
  2. What did the sound make you think of (past experiences)?
  3. Were the past experiences pleasant or painful?
  4. Make a list of words or phrases that describe your feelings at the time you heard the sound.
  5. List as many descriptive words as you can think of to describe the sound. (Example: Buzz, insistent, low-pitched.)
- D. By adding other words or phrase modifiers to the base sound, write one sentence about each sound describing the sound or your feelings when you heard the sounds.

**II. Seeing and Touching**

- A. Look for some object (mushroom, wildflower, tree, etc.) that you think is beautiful.
- B. Feel and examine the object.
- C. List as many words as you can think of to describe that object -- dainty flower, moist, rubbery, golden mushroom, etc.
- D. Write one sentence using as many of the descriptive words as you can -- you may also add other word or phrase modifiers to describe your feelings about the object.
- E. Have students read their sentences.
- F. Discuss those descriptive words used that might be new to some students and help them add the words to their vocabulary.

Category : Language Arts

Contributor : Lynn Hodges

### Concrete Poetry

- Concept :
- I. Communication is achieved through graphic media.
    - a. Graphic media is exemplified by pictures, graph, and linear art forms
  - II. Communication is achieved through literary media.
    - a. Poetry is an example of literary media.
  - III. Concrete Poetry is a unification of graphic media and literary media which communicates more than the other two media separately.
    - a. Concrete poetry is free verse, no rhyme or meter, and can be of one of three types:
      1. Visual (see example sheet)
      2. Story (see example sheet)
      3. True or factual (see example sheet)

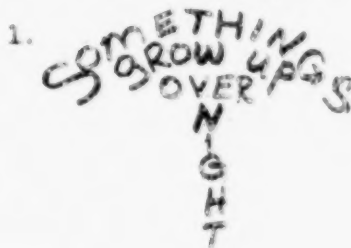
- Objectives:
1. At the end of this lesson, the student will be able to write a concrete poem in each of the three forms.
  2. At the end of this lesson, the student will be able to orally explain the rationale and technique of concrete poetry.

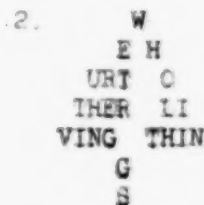
Procedure: Ask students how we communicate. List different ways. If students do not include "writing," "pictures" or "drawings", add to list.

Ask students to decide the oldest known types of writing (hieroglyphics, cunifoms ) How is this writing different from ours? Is there a way we could communicate more in our writing?

Tell students that you want them to try a new form of communication which can communicate more than either writing or drawing. Begin with examples: Type 1 - Visual: The visual form of concrete poetry simply makes a statement, but by the arrangement of the words, directs the reader towards a particular frame of reference.

Example - Type 1

1. 
  
SOMETHING  
GROW  
OVER  
APPLES  
N  
I  
G  
H  
T

2. 
  
W  
E  
H  
URT  
O  
UR  
L  
I  
VING  
THIN  
G  
S

Category: Language Arts  
Contributor: Lynn Hodges  
Title: Concrete Poetry

Continued

Procedure:

Type 2 - Story:

The story form of concrete poetry make a statement about the action of something or person, and by its visual arrangement, completes the action and reveals an ending.

Examples - Type 2

1.  2. I TOUCHED  
a TOG. 3. I Sneaked up on  
a f<sup>ro</sup>g.

Type 3 - Factoids

The factoid form of concrete poetry is the expression of a common idea, fact, or image by use of the spatial or place on the page relationship between words. The form is the most abstract of the three forms of concrete poetry.

Examples - Type 3

1. \* Water  
fish swim 2. \* 2  
Ground  
1
3. "Life" "Death" 4. CO<sub>w</sub>
- Me Grass  
Grass Ground  
Ground Me

- \* 1. fish swim under water.  
2. Oil from below ground to above ground.  
3. "Life" - I'm above the grass, above the ground.  
"Death" - I'm below the ground, below the grass.

Discuss each example and type.

After the students have seen and discussed the examples, ask if anyone has thought of another example. Put example on board and ask students to tell the type or form.

Category: Language Arts  
Contributor: Lynn E. Jones  
Title: Concrete Poetry

Continued

Procedure: Give each student two examples of each type.  
Have the student show and tell or discuss their concrete poems.

Related Activities:

1. Describing the various concrete poetry forms.
2. Keep a class album of concrete poems.  
or display on bulletin board
3. Have poems published in school or local newspaper.
4. Write scientific or non-fiction concrete poetry form.

Category 1 Language Arts

Contributor: Phyllis Bishop

Environmental Influence

**Purpose:** To illustrate to the students how environment or habitat affect one's vocabulary, communication, and physical appearance.

**Procedure:** Students are to divide into two groups. One group is to pretend to be Spanish while the other pretends to be D.D. The only background at this point is what is listed on their handout sheet.

Once students have finished naming objects a comparison should be made of each object as to what each boy would have called it. Also to be discussed is each boy's attitude toward each item.

Ask the following questions: (they may be rearranged to suit the atmosphere of the class)

1. Did the boys talk the same language?
2. How was their language alike and how was it different?
3. Could they have communicated over the telephone?
4. What has influenced their speech patterns?
5. Which student had the larger vocabulary? Why?
6. Can you adequately judge by the amount of information given?
7. What do you think these two boys look like? (If not brought out ask about the following:
  1. Skin color           Why?
  2. Hands               Why?
  3. Feet               Why?
  4. Size               Why?
8. What would you "guess" their personalities to be from what we have said about them?
9. Does environment or habitat influence physical appearance, vocabulary, and communication?

Category : Language Arts  
Contributor : Phyllis Bishop  
Title: Environmental Influence  
Sample Handout Sheet

Continued

Your name is Sparkie. You are fifteen and from the hills of eastern Kentucky. It is about the year 1925 or 1930. Your parents have little or no money and operate a small farm. What money your family has comes from tobacco or small animal hides. You went to the second grade and have spent your years hunting and working on the farm.

In front of you there are ten (10) numbered items. What would you, as Sparkie call them?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Category: Math

Contributor: Stephen C. Bell

Environment and Mathematics

- Objectives:
1. Identify six major pollution areas in the environment:
    - a. Water pollution
    - b. Air pollution
    - c. Litter
    - d. Population
    - e. Noise pollution
    - f. Solid wastes
  2. Identify specific causes of each area (direct causes)
  3. Determine consequences of each type of pollution
  4. Discuss possible solutions to each area
  5. Discuss how individuals can help in each area
  6. Identify four cultural causes of environmental problems (indirect causes)
    - a. Growth - things and people
    - b. Laissez faire - efforts of individuals to achieve own self-interest will lead to the common good
    - c. Economic efficiency - cheapest way is the best way
    - d. Specialization - do things and ignore side effects
  7. Use mathematics to solve practical outdoor problems

- Procedure:
1. Discussion
  2. Question and answer
  3. Time - telling with stick
    - a. find 2' stick and place in sunlight
    - b. find due North with compass
    - c. Draw circle and number
    - d. Read time from shadow
  4. Determining height of tree with ratio
    - a. Use yard stick and determine length of shadow
    - b. Measure shadow of tree
    - c. Formula:  $\frac{\text{length of yd. stick}}{\text{length of yd. stick shadow}} = \frac{\text{length of tree}}{\text{length of tree shadow}}$
  5. Determining height of tree without sunlight
    - a. Stand person of known height beside tree
    - b. Measure height of person with pen
    - c. Move pen up tree
  6. Finding rate of ants
    - a. Measure distance for 10 seconds
    - b. Use formula -  $R = \frac{D}{T}$
    - c. Convert to m.p.h.
  7. Collecting geometric shapes in nature
    - a. Search for examples in nature of spheres, cones, squares, cylinders, cubes, and octangles
    - b. Divide into teams

- Conclusion:
1. Summarize problems of pollution
  2. Summarize use of mathematics in outdoor problems

Category: Math

Contributor: M. Ed Veazey

Map and Compass

- Concept:
1. The map is a needed instrument.
  2. A knowledge of basic mapping procedures aids in understanding the use of a map.
  3. Personal measurements will help the student acquaint with mathematics.
  4. The magnetic compass is a useful instrument when students are using or making a map.

- Objectives:
1. To acquaint the student with the use of a map and compass.
  2. To develop skills in estimating distances and areas out-of-doors.
  3. To determine the slope of the land.
  4. To locate objects by triangulation.
  5. To utilize the above mentioned skills to construct an accurate map of a given area.

Materials:

- \*Topographic map of the area to be studied
- \*Planimetric map of same area
- \*Magnetic compasses
- 50 ft. tape measure
- 50 surveying stakes and hammer
- Transit (make shift)
- \*Drafting board (make shift)
- \*Graph paper
- \*Straight edge
- Different colored plastic ribbon (optional)

\*One for each two students minimum

|             |             |               |         |
|-------------|-------------|---------------|---------|
| Vocabulary: | Planimetric | Back Azimuth  | Terrain |
|             | Declination | Topographic   | Contour |
|             | Azimuth     | Triangulation | Slope   |
|             | Rise        | Run           | Transit |

- Procedure:
1. Introduce a map of an area.
  2. Explain the parts of the map.
  3. Teach map reading as a language.
  4. Introduce the magnetic compass.
  5. Play games related to map study and compass use to relieve the student's anxiety.
  6. Introduce methods of estimating and measuring distances, heights, etc., in the out-of-doors.
  7. Learn helpful devices to support teaching of subject, such as contour mapping techniques, locating objects by triangulation, etc.

Category: Math  
Contributor: M. Ed Veazey  
Title: Map and Compass

Evaluation:

1. Do the students understand the practical use of the map?
2. How well do the students perform the assigned tasks of estimating and measuring?
3. Do the students understand the use of triangulation in locating objects?
4. Do the students understand the application of slope measurement in topographic mapping?

Category: Math

Geometry in the Field

- Purpose:
- A. To use instruments of measure and geometric principles to:
    1. Locate the center of the silo
    2. Measure its radius, circumference and height
  - B. To use mathematics facts to compute:
    1. The value of  $\pi$
    2. The volume of the silo in bushels
    3. The number of silos necessary to store the entire 1971 U.S. corn crop.
    4. The amount of land necessary to construct the silos.

Materials: String, measuring tape, stake, paper, pencil and worksheet

Procedure: Introduction:

Since geometry literally means earth measure, it is reasonable that students of geometry, even those in a theoretical course of demonstrative geometry should have some experience in experimental geometry and related earth measure. With this in mind, it is intended to include such a study in the geometry classes at South Marshall High School. The unit will be of an enrichment nature and will be introduced early in the school term. With proper coordination it could be extended into more detailed study of population and food supply in the social studies classes, and the agriculture classes.

The following lesson would be the first outdoor experience of a two day field trip to the Youth Center in the Land Between the Lakes. It will follow a three day classroom orientation program which will introduce the study and familiarize students with techniques and tools necessary to complete the unit.

Development:

The students and instructor will travel to the silo and enter at its base. Two chords of the circular base will be constructed of string. The perpendicular bisectors of these chords will also be constructed with string, and a stake will be placed at the point where they intersect. According to a theorem of plane geometry, this is the center of the base of the silo. The radius, diameter, circumference, and height will be measured with a fifty foot tape. The value of  $\pi$  will be computed and compared with the accepted value. The problems on the worksheet will be computed by the individual students.

Category: Math  
 Title: Geometry in the Field  
 Sample Worksheet

Continued

A Practical Application for a Theoretical Subject

Definitions:

- Circle: A circle is a closed curve lying in a plane, all points of which are equidistant from a point within called the center.
- Radius: The radius of a circle is a straight line segment from the center of a circle to a point on the circle.
- Diameter: The diameter of a circle is a straight line through the center and terminated at both ends by the circle.
- Chord: A chord is a line segment whose extremities are on the circle.
- Circumference: The circumference of a circle is the length of the circle.
- $\pi$  : The Greek letter  $\pi$  is an arbitrary symbol used to represent the ratio of the circumference of a circle to its diameter.
- Perpendicular : When two lines meet to form a right ( $90^\circ$ ) angle, the lines are perpendicular to each other.
- Bisect: To divide into two equal parts is to bisect.

Formulas:

$$A_{\text{circle}} = \pi r^2$$

$$1 \text{ acre} = 43,560 \text{ square feet}$$

$$V_{\text{cylinder}} = \pi r^2 h$$

$$640 \text{ acres} = 1 \text{ square mile}$$

$$1 \text{ bushel} = 1.24 \text{ cubic feet}$$

Theorem:

The perpendicular bisector of a chord of a circle contains the center of the circle.

Problems:

1. Determine the volume of the silo at silo overlook in the LBL.
2. How many bushels of corn are necessary to fill the silo?
3. This year's corn crop is estimated to be 5,345,007,000 bushels. How many silos of this size would be needed to store this entire crop of corn?
4. If they were standing in a field with each silo one foot from the other, how much land would be necessary to construct the needed silo?
5. Compare this land mass to known mass.

Category: Math

Contributor: Carol C. Hayes

Plane Trigonometry:  
Finding the Height of a Tree

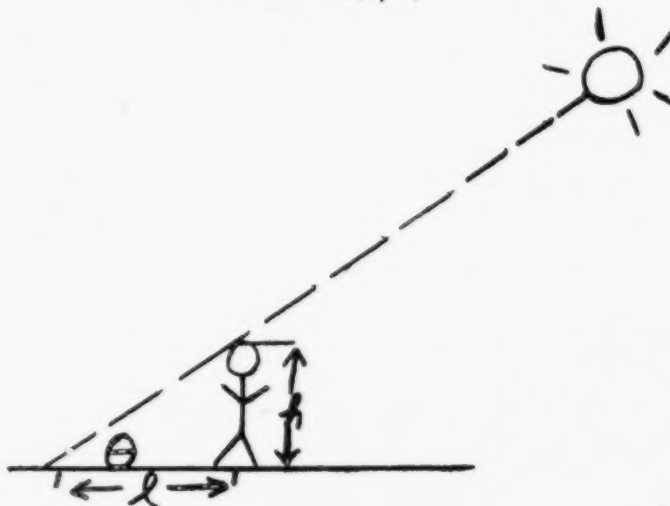
- Objective: At the conclusion of this exercise, the student should be able to:
1. Calculate the angle of elevation of the sun by measuring the height of an object perpendicular to the ground and its shadow.
  2. Calculate the height of other objects perpendicular to the ground using the previously calculated angle of elevation of the sun.

Materials: Measuring tape, trigonometric tables

Theory: Every right triangle has three sides and three angles, one of which has a value of 90 degrees. When two sides are known or when one side and an acute angle are known, the remaining three parts of the right triangle can be determined.

When two sides of the triangle are known, the acute angles of the triangle and the remaining side can be calculated using trigonometric relations. For instance, if the height of an object perpendicular to the ground and the length of the shadow cast by the object are known, then the angle of elevation of the sun can be calculated using the relation --

$$\theta = \text{Arctan}(h/l)$$



Category: Math

Contributor: Carol C. Hayes

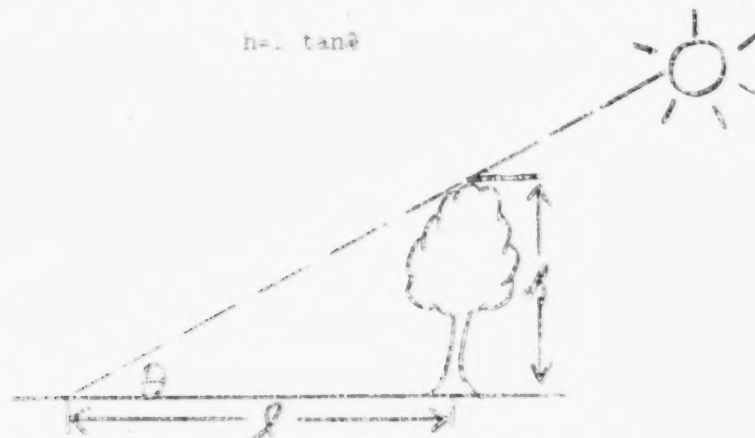
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Title: Plane Trigonometry: Finding the Height of a Tree

### Theory

If one side and an acute angle are known, then the remaining acute angle and two sides of the triangle can be calculated using trigonometric relations. For example, if the length of the shadow cast by an object perpendicular to the ground and the angle of elevation to the sun are known, then the height of the object can be calculated using the relation --

$$h = l \tan \theta$$



### Procedures

1. Measure the height of a person.
2. Measure the length of the shadow cast by the same person.
3. Calculate the angle of elevation of the sun.
4. Select a tree and measure the length of the shadow cast by the tree.
5. Calculate the height of the tree using the previously calculated angle of elevation of the sun and the measured length of the tree's shadow.

### Related Activities:

What are other possible ways of measuring the height of the tree?

Category : Social Studies

Contributor : Buddy L. Nichols

### Cemetery Visit

Concepts: Will be the visit outdoors to a cemetery site. In most places there are several cemetery sites to visit.

Objectives:

1. To learn where early settlers came from, the different countries.
2. To realize life expectancy has changed in the last 100 years.
3. To study different kinds of grave markers, type of stone and epitaphs.
4. To discuss traditions, taboos related to burial plots.

Materials: Transportation to the cemetery site. Each student have pencil and paper. Paper and crayon for rubbing.

Procedure: Visit Hematite Cemetery off Taylor Bay and let each student investigate on their own. After the investigation there will be discussion.

1. Identify graves of persons over age 5 dying before 1900.
2. Identify graves of persons over age 5 dying before 1920.
3. Information such as date of birth, date of death.
4. Write an interesting epitaph.
5. Check the material used as grave markers and determine what area it came from.
6. Do you notice any pattern of death such as possible epidemic?
7. Do you find any unknown tombstones or graves?
8. What do you think of the unknown tombstones or graves?
9. Locate misspelled words.
10. Locate oldest and most recent grave.
11. Determine the period (1-3 year) of the most burials.
12. Make a rubbing of one epitaph prior to 1875 and a rubbing of one after 1930.
13. Locate and identify the largest family.
14. Determine the most affluent and the least affluent families.
15. Locate the oldest and youngest person buried in cemetery.

The visit to the cemetery may be the teacher's suggestion, but it would be better if a student made the suggestion.

This suggestion could have been made after talking about families of early settlers who came to this area or any other area.

Category: Social Studies  
Contributor : Buddy L. Nichols  
Title : Cemetery Visit

Continued

Related Activities:

Art could enter into your visit by making rubbings of designs on tombstones.

Health could center on life expectancy. Population problems of now and years past.

Geography - Why and how did many early settlers come to this area, use of rivers.

History - Industry, forms of government, types of homes and tools, materials used.

Math - Figure the age of persons buried. Also find the price of different types of tombstones.

These subject areas could be used and could be tied into the cemetery visit at the cemetery and as a follow up back in the classroom.

Category: Complimentary Activities

Contributor : Larry M. Wilson

### Watches

**Purpose:** To acquaint teachers with the procedure for conducting a day-watch and a nightwatch.

**Objectives:** Participants will be able to conduct either a day or night watch within their own school systems.

**Materials:** Pencil, worksheet, thermometer, compass, and blanket for nightwatch.

**Procedure:** A watch is an especially good activity to be utilized to help the student become more aware of the natural surroundings. One relates to his environment through his senses - sight, hearing, smell, touch, and taste.

A watch is designed to bring about an awareness on the part of the student by giving him the opportunity to observe things around him using one sense at a time. After a watch one should be ready to approach any other outdoor activity with a greater sensitivity to all phases or senses of a said activity.

#### Day Watch:

1. Distribute worksheet
2. Spread students to quietly observe for 10-15 minutes by themselves.
3. Reassemble group to discuss observations.

#### Night Watch:

1. Flashlight for emergency use only.
2. Establish signal (quiet hiss) to stop and direct interest of group quickly and quietly.
3. Small group is needed.
4. Initiate walk with no lights or talking to observe animal sounds, graphic forms, odors, etc.
5. Halt group scatter in close group to observe astronomy, colors, sounds, feelings, touch nearby organic and inorganic objects, taste, etc. (Cover similar objects as listed on daywatch worksheet.)

One to two stops to lay down and observe surroundings at night included with nature-animal trail hike would normally constitute a night watch.

Category : Complimentary Activities  
Contributor: Larry M. Wilson  
Title: Watches

Continued

Sample Daywatch WorksheetThe Weather

1. What is the approximate temperature (actual temperature if thermometer is available) ?
2. Which direction does the wind blow from?
3. Is the wind light, moderate, strong?
4. Is there fog or dew?
5. Is it clear or cloudy?
6. Is it raining?      Snowing?

The Sky

1. What can you see in the sky?
2. Is the sun high or low?
3. What colors can you see in the sky?

The Earth

1. What can you see?
2. What can you smell?
3. How does the ground around you feel ?
4. How far can you see?
5. What living creatures can you see?

Category : Complimentary Activities  
Contributor : Larry M. Wilson  
Title: Watches  
Sample Daywatch Worksheet

Continued

Sounds

1. Describe the sounds that you hear.
2. What do you think causes these sounds?
3. Can you hear sounds caused by humans?
4. What are they?

Yourself

1. How do you feel?
2. What are you thinking about?
3. At this point, what would you like to do?

Category: Art  
Contributor: Jeanette Turner

Mosaic of Farm Animals

Grade Level: First Grade

**Purpose:** This project is an activity which can be used to enrich a unit on farm animals. It should be done after the children have visited a farm and have an understanding of the farm animals. This exercise can be done outside where the materials are available. However, it can be done in the classroom after the children have collected the needed materials.

**Objectives:** To create an interest in the study of farm animals.  
To develop an appreciation for farm animals.  
To develop an awareness of the different physical features of farm animals.  
To develop an interest in mosaics using nature's resources.  
To demonstrate an awareness of the beauty, shapes and texture in nature.

**Materials:** Pebbles, slag, sand, construction paper (8 x 10 in.), pencils, fast-drying glue, hammer, and paper or towel.

**Procedure:** Let the children look for sand, small pebbles, and slag. Some of the pebbles or slag may need to be broken with the hammer for parts of the animal such as the eyes. The pebbles or slag should be covered with the cloth or paper before chipping for safety precautions.

After the materials have been gathered provide each child with a sheet of construction paper. On the construction paper the child can draw the outline of any farm animal that he chooses. Then have the children trace the outline with glue and begin pasting the materials on the paper. The animal should be filled in with pebbles, slag, or sand. When using sand spread the glue on the paper with the finger, sprinkle the sand on the paper, and shake off lightly. Some may want to make a background for the animal; however, allow the children to be creative.

After the activity have children show their picture to the class and tell about it. Then put pictures on display.

Category: Art

Contributor: Carolyn Lawrence

### Art Activity on Spider Webs

Grade Level: First Grade

Purpose: The purpose to be developed from this activity would be to show a visual relationship between art and nature.

Objective: This related activity is to be done as a part of a unit on animal habitats. We will begin the study of the spider and his home with the specific objectives in mind:

1. To be able to recognize a spider by some of their main characteristics - such as two body parts, eight legs, no antennae and wings.
2. To develop an understanding of how the spider is dependent upon his body functions for survival.
3. To develop an awareness of how the spider builds his home.
4. To develop an awareness of how animals are able to utilize our environment.

Materials: Dark colored construction paper, spray paint, and hair spray.

Procedure: Locate spider web. Spray the web lightly with paint on both sides, with the breeze if there is any. Do not attempt this exercise on a windy day. When all parts of the web have been sprayed - ease paper close to the underside of the web at once. Keep paper steady as pulling or twisting will destroy the web. As soon as the web is stuck to the paper, cut the guide wires at the edge of the paper very carefully. Put on flat surface to dry. For permanent mounts spray with hair spray to secure web.

Suggested questions that might be used to develop this concept:

1. Do you know what a web is?
2. Have you ever seen a spider's web?
3. Does this remind you of anything that you have seen before?
4. How do you suppose a spider made this web?
5. Why do you think he made this web?
6. Where did the spider get his building materials?

Category: Recreation

Contributor: Ewell Bouldin

Recreation--Refreshment of the Body and Mind

Since the philosophy of this area is to use the natural environment to each, it seems only logical to use this area of beautiful natural environment for recreation.

I recommend that a program of recreation suitable for the area be intergrated with other teaching activities, a program that will be compatable with the seasons of the year.

Recreation is not only fun but it affords a wonderful opportunity for learning and teaching, in fact some of the best learning and teaching may very well be done in this area.

I would set up weekly programs for the different seasons and let the different age groups select the activity that best suits them.

Hiking would be on the schedule every day in the year. Walking is an activity in which almost everyone can take part. It is probably the best form of exercise for everyone, also when walking a person can see, hear, smell, and feel far more and better than when riding in an automobile the natural wonders of this area.

I would develop many trails just for walking deep into the interior like the one that we used Thursday. By using these trails the hikers and wild-life would not be distrubed by the vehicles, until these trails could be built, existing roads may be used.

Bicycling is another activity that can be used much in the same way as hiking so I would have this on my weekly schedule. Riding horses is another activity that would be scheduled for those who would choose it.

Category : Recreation

Contributor : Ewell Bouldin

Title: Recreation--Refreshment of the Body and Mind

Continued

These three activities could very well be used for teaching other subjects. Outdoor education can be recreation and recreation can be outdoor education.

Water activities would be a part of the schedule in my program. Boating and sailing facilities should be established with the lakes which is a prominent part of this area. Boating docks for fishing would be needed, and swimming facilities should be established for use as a structured activity.

Hunting would be scheduled according to the season and the laws.

Camp fire activities should be scheduled for the proper time of the year.

Another important activity is group games, they would be scheduled for special groups and special occasions.

Category: Health  
Contributor: Jane Fainey

Personal and Community Hygiene Relative  
To Use of National Park Facilities

Introduction:

Before discussing hygiene in a relative manner we first need a correct concept of health. Definitions vary as to what a state of health actually is, but for our purposes we shall accept the definition of the World Health Organization - "a state of complete well-being, socially, mentally, and physically." It does not relate merely to the absence of disease or infirmity.

Our philosophy of hygiene is preserving and promoting health, also, that this definitely has two phases; personal hygiene which is the health maintenance in the individual, and community hygiene which deals with the control of the environment (sanitation), and with governmental and group activities for health protection and promotion.

The general goal is identification of some of the benefits to be gained in developing physical capacity, mental efficiency, and personality changes as a result of having the opportunity to observe the beauties of nature, and the wonders of the environment.

Part of the philosophy of environmental education is that man is an integral part of nature's system from which he cannot be separated. Throughout this cultural system, organizational strategies and technological processes are all incorporated in the social environment through which man interacts with the bio-physical environment.

Resources are part of the biological physical environment that man has appraised as being immediately or potentially useful to him.

Environmental education should be a motivating factor to push man into a further study of how he can be an effective agent in achieving the desired goals in the utilization and conservation of the natural habitat of the particular area. This should be a factor in inculcating the understanding of the youth the relation of wildlife as part of nature with the mutual need of one for the other.

The objectives of this plan is to introduce a class of students to the enjoyments of a stay in a park facility, to observe nature's wildlife and the luxuriant growth of natural flowers, trees, and other growing green things. This should develop physical capacity, mental efficiency, and a change in personality, with the knowledge of personal hygiene and community hygiene that is essential in personal health and community health.

Objectives:

1. Given canned coca cola and box of cookies be able to describe the utilization of the picnic area for light refreshments in a sanitary manner, and leave an unpolluted area.

Category: Health

Contributor: Jane Rainey

Title: Personal and Community Hygiene Relative to Use of National Park Facilities

(continued)

Objectives:

2. Given a box of detergent and paper towels to be able to describe the method of showering in a cabin without the danger of personally incurring a risk of athlete's foot.
3. Describe a hygienic method of brushing one's teeth when cups or glasses are unavailable or a known clean area to place toothbrush or toothpaste, when given a bar of hand soap, and a paper towel, and toothbrush and toothpaste.

Methods of Teaching: Group discussion  
 Demonstration  
 Role playing  
 Film

Teaching Plan:

| Topic                                                                                                                                                                                                                                                                                                                         | Activity                                                                                                                                                                                                                                              | Expected Behavior                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Principles of not spilling or dripping fluids, or dropping food particles that may attract flies, ants, or other insects. Flies are one of nature's most active disease carrying insects. The filth shown on their legs is most clearly shown. Ants also transmit by crawling from one filthy area to another, then to foods. | Film on contamination by flies. Discussion of principles of hygiene to be carried out to prevent transmission of possibly amebiasis, typhoid, salmonella, or other gastrointestinal diseases.                                                         | Be able to identify how disease may be carried by a fly or ant after eating any crumbs then going to sweets or other liquids spills. From there to other filth as manure, decaying foods that may be scattered, thence to your food.                                                                         |
| Discuss epidemiology with focus on disease and total health disease spectrum.                                                                                                                                                                                                                                                 | Demonstration: Use of paper covering box of cookies for use of putting metals of opening cans of coca cola. Setting cans on and catching crumbs. When finished put cans in paper, gather up outer edges toward center for carrying, put in waste can. | Be able to open box of cookies, spread paper covering cookies box, open coca cola's put metal from cans on it and use to set drinks on, also to catch cookie crumbs. Take paper up in correct manner with cans in it, and place in garbage receptacle. While removing paper summarize principles for action. |
| Be able to describe the correct method of disinfecting floor or shower, by use of detergent, and then how to shower and step out on dry paper towel after dripping feet.                                                                                                                                                      |                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                              |

Category: Health

Contributor: Jane Rainey

Title: Personal and Community Hygiene Relative to Use of National Park Facilities

(continued)

Teaching Plan:

| Topic                                                                                                                                                                                                                                                                                                                                                                                                        | Activity                                                                                                                                                                                                                                                                                                                                                                                                                                       | Expected Behavior                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discuss principles of fungi living in damp area. Person with athlete's foot showering then someone not infected coming in and contacting the fungi because of poor hygienic action. Athlete's foot is caused by a microscopic fungi, which required a damp area to live in. Incubation period - few days. Prognosis a disease that is termed chronic because of its being difficult to free one's self from. | Group discussion of fungi. Present in tremendous variety of forms and kinds. Related to mushrooms but very much smaller. Disease scattered by fungi, ringworm of scalp or nails, athlete's foot, histoplasmosis (lung condition) and place free sprinkling of detergents on shower floors. Lightly run shower only to dissolve detergent. After 15 min. turn on faucet of hot water and thoroughly run to rinse shower floor of any detergent. | Be able to describe method of freely sprinkling detergent on floor of shower, letting just enough water run to dissolve detergent. Leave it on floor of shower for 15 minutes then turn shower on and thoroughly wash detergent off. After showering techniques for drying body then feet and stepping out on dry towels, sitting in chair to put on socks and shoes.       |
| Rx: (Treatment) For those with tender skin, it is better to have your pharmacist to make up a Modified Whitfields Ointment and use every night for at least a month. Wash off in a.m. dry thoroughly.                                                                                                                                                                                                        | Place towels on outside of shower to step out on. Have chair, socks, and shoes close enough to turn from dry paper towel to sit down to put on socks and shoes.                                                                                                                                                                                                                                                                                | Describe principle for need of continuous use for awhile as fungi grows from spores under favorable conditions of heat and moisture. Principle cleanliness and dryness.                                                                                                                                                                                                     |
| Description of hygienically brushing of teeth, after eating at a picnic area by having bar of hand soap, two paper towels, toothbrush and toothpaste.                                                                                                                                                                                                                                                        | Discuss need for hygienically cleansing of teeth after eating, and prevention of getting any disease causative bacteria in mouth that may affect mouth, throat, or gastrointestinal system.                                                                                                                                                                                                                                                    | Describe going to shower cabin, placing one dry towel, to place toothbrush, toothpaste, and soap on. With soap, thoroughly wash hands allowing water to run down from wrists over hands. Then put toothpaste on brush and brush teeth. Use left hand held in cup fashion to get water to rinse mouth after washing. Summarize - need for clean dry area to keep toothbrush. |
| Discuss principle of using clean hand as cup for water, rather than not brushing teeth and may be able to get drink same method. Principle of having toothbrush and paste placed on a clean area. Many gastrointestinal diseases can be incurred. Also, gingivitis could be transmitted by placing of toothbrush on area where one recently used contaminated brush had been.                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                             |

Evaluation: Accuracy of carrying out procedures utilizing principles of hygiene.

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